Wide-Field Endoscopic Resection of Large Laterally Spreading Tumors of the Colon

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Abstract

Endoscopic mucosal resection is now a widely practiced technique to treat large and laterally spreading lesions of the colon. It is generally a safe and effective treatment for the excision of large flat adenomas greater than 20 mm and up to more than 100 mm in size. Here the authors have presented the techniques involved in the removal of large, laterally spreading, and colonic adenomas. This article is part of an expert video encyclopedia.

Keywords

Colonic adenoma; Endoscopic mucosal resection; Polypectomy; Standard endoscopy; Video.

Video Related to this Article

Video available to view or download at doi:10.1016/S2212-0971(13)70188-2

Materials

- Submucosal injection fluid: either normal saline or a colloidal solution such as succinylated gelatin (gelofusine), in combination with epinephrine, diluted to a final concentration of 1:100 000. Indigo–carmine dye 8 mg 500 ml^{-1} is added to this solution, yielding a final concentration of 0.04%.
- 25-Gage injectors; Olympus Corporation, Tokyo, Japan.
- A range of snares including 20-mm spiral snare; Olympus Corporation, Tokyo, Japan and 10-mm and 15-mm mini oval, and hexagonal snares; Cook Medical, Browns Plains, Brisbane, QLD, Australia.
- Microprocessor-controlled generator delivering short bursts of cutting current interspersed between longer intervals of more prolonged coagulation current (e.g., ERBE VIO 300; Tübingen, Germany or Olympus ESG-100; Olympus Corporation, Tokyo, Japan).

Background and Endoscopic Procedure

This video demonstrates three different lesions removed by inject and resect endoscopic mucosal resection (EMR). In order they are:

- 45-mm hemi-circumferential 0-IIa granular laterally spreading tumor (GLST) of the mid-transverse colon.
- 60-mm hemi-circumferential 0-IIa + 1s GLST of the distal rectum.
- Greater than 100 mm circumferential 0-IIa laterally spreading tumor of the proximal transverse colon.

Key Learning Points/Tips and Tricks

- Injection technique.
- Solution selection and the use of dye.
- Snare selection.
- Snare technique and avoiding complications.
- Inspection of the post EMR defect.

Scripted Voiceover

Time (min:sec)	*Voiceover text*
0:00-0:40	This is a case with a Paris IIa 45 mm laterally spreading lesion of the transverse colon. Begin the injection before stabbing the mucosa, this ensures the submucosal plain is found and swiftly resulting in immediate mucosal elevation. Once the lesion has begun to elevate, slightly draw back on the injection to allow the tissue to lift.
0:41-1:30	Once elevated, align the snare alongside the elevated portion ensuring a few millimeters of normal mucosa is included. Close the snare maximally. This excludes the muscle layer. The entrapped tissue should slide easily back and forth and be freely mobile relative to the underlying colonic wall. Then we apply endocut diathermy to the trapped tissue.
1:07	Repeat the injection.

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01:24	Carefully align the snare with the edge of the advancing mucosal defect. Aspirate gas as you close the snare. This reduces the footprint of the lesion on the bowel wall and maximizes tissue capture. We prefer the ''inject and resect'' technique, elevating not the entire lesion, but each segment to be removed.
02:22	During the cut we apply some gentle pressure and pull the trapped lesion towards the lumen to protect the bowel wall from collateral damage.
2:51-3:06	Careful inspection of the post EMR mucosal defect is essential. Here we see a typical bland blue matt appearance defect with no visible vessels: this is an excellent result.
0:00-00:40	In the next case, we see this is a large IIa + 1 s granular laterally spreading tumor of the distal rectum. We use the same technique, start at one edge and ensure a margin of normal tissue is included. Spiral snares are preferable as they achieve greater tissue capture.
00:48	Here we get an excellent view of the large venous system within the deep submucosa. This is a typical aspect in the rectum.
1:06	An important tip is to insure an optimal position of the patient. Position the patient so the lesion is not dependent. This maximizes the influence of gravity on tissue retraction and allows a clear field with free access for defect inspection and treatment of bleeding or other complications.
2:17	Non-bleeding visible vessels within a left colon defect usually do not bleed. At present we do not advise prophylactic coagulation of these. This is an area of current research.
2:28	Again careful inspection of the post EMR defect and its margins is important. The margins should be clean and free of adenoma as shown here.
0:00-0:10	This homogenous 0-IIa granular laterally spreading adenoma of the proximal transverse colon extends almost circumferentially and is more than 100 mm in size. Use the injection to elevate the lesion into the lumen.
0:12	Now we proceed with piecemeal resection of this large lesion.
1:16	Use a small stiff thin wire snare to remove polyp tissue at the margin.
1:49	If there is an area of non-stained submucosa irrigate the unstained area with the injection solution. The dye is avid for the submucosal connective tissue and the blue staining confirms the absence of deep injury.
2:32-3:15	The final resection shows a wide, almost circumferential, mucosal defect with residual adenoma. There are numerous visible blood vessels. The defect is carefully inspected for residual adenoma or evidence of injury to the muscle layer.
	If the defect is satisfactory and the patient is well after the procedure, then they may be discharged home the same day on a clear liquid diet. This type of treatment is highly cost effective.

Video 1:
GLST 0-IIa 45 mm hemicirc transverse.
Video 2:
GLST 0-IIa + 1s massive distalrectal.
Video 3:
Lagreco_final.

Further Reading

Bourke, M. J. Endoscopic Mucosal Resection in the Colon: A Practical Guide. *Techniq. Gastrointest. Endosc.* **2011**, *13*(1), 35–49.

Holt, B.; Bourke, M. J. Wide Field Endoscopic Resection for Advanced Colonic Mucosal Neoplasia: Current Status and Future Directions. In press *Clinical Gastroenterology and Hepatology* **2012**, *10*(6), 969–979.

Moss, A.; Bourke, M. J.; Metz, A. J. A Randomized, Double-Blind Trial of Succinylated Gelatin Submucosal Injection for Endoscopic Resection of Large Sessile Polyps of the Colon. *Am. J. Gastroenterol.* **2010**, *105*(11), 2375–2382.

Moss, A.; Bourke, M. J.; Williams, S. J.; *et al.* Endoscopic Mucosal Resection Outcomes and Prediction of Submucosal Cancer from Advanced Colonic Mucosal Neoplasia. *Gastroenterology* **2011**, *140*, 1909–1918.

Swan, M. P.; Bourke, M. J.; Alexander, S.; Moss, A.; Williams, S. J. Large Refractory Colonic Polyps: Is it Time to Change Our Practice? A Prospective Study of the Clinical and Economic Impact of a Tertiary Referral Colonoscopic Polypectomy Service. *Gastrointest. Endosc.* **2009**, *70*(6), 1128–1136.

Swan, M. P.; Bourke, M. J.; Moss, A.; *et al.* The Target Sign: An Endoscopic Marker for the Resection of the Muscularis Propria During Colonic Endoscopic Mucosal Resection. *Gastrointest. Endosc.* **2011**, *73*(1), 79–85.